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BULLETIN

OF

THE NEW YORK ACADEMY OF MEDICINE

INCORPORATED 1851

NOVEMBER, 1932

PUBLISHED MONTHLY BY

THE NEW YORK ACADEMY OF MEDICINE

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BULLETIN OF
THE NEW YORK
ACADEMY OF MEDICINE

VOL. VIII NOVEMBER, 1932 No. 11

ANNUAL GRADUATE FORTNIGHT
TUMORS
October 17 to 28, 1932

ADDRESS OF WELCOME*

JOHN A. HARTWELL
President, The New York Academy of Medicine

Five years ago when the Academy of Medicine first considered the possibility of establishing some undertaking in the way of a period of graduate teaching, a great deal of doubt was expressed as to the practicability of the plan. It was tentatively adopted by the Council as an experiment. After the first Graduate Fortnight there was still doubt as to whether it would prove to be a permanent success and would give a return commensurate with the effort and the expense involved. The decision to hold it a second year was, therefore, taken with some misgiving.

In extending a welcome to our guests at this fifth Graduate Fortnight, I am fully confident that the Council acted wisely in voting to continue the undertaking. It has now become so well established an institution and its educational value is so well recognized throughout the country that the entire profession has expressed an interest in its continuance. That more than seven hundred physicians have registered for this two weeks exercise under the present economic situation is ample evidence that the medical profession is receiving something that they consider of value.

*Delivered October 17, 1932.

The splendid work that has been accomplished by our Committee on Medical Education and its various sub-committees is witnessed in this Fortnight by the unusually qualified list of speakers who will address us and by the setting up of the truly remarkable exhibition of pathological and other material bearing upon the general subject of tumor growth.

In welcoming you to the Academy, I take very great pleasure in placing at your disposal all of our facilities during the two weeks that you will be our guests. While I cannot speak officially for other of our institutions than those which are taking part in the formal program, I know that I am expressing the wish of all our hospitals and educational institutions in saying that you are equally their guests and that they will make an equal effort with ourselves to make your visit interesting and profitable. I know that I can give you this assurance because of the experience of the Academy in receiving the hearty cooperation that it has from all those institutions in making New York City a centre wherein the practicing doctor can find opportunities for study in almost any field under most favorable circumstances.

I feel sure that a considerable number of you already appreciate my very great interest in the problem of the continued education of the practicing physician. I am fully convinced that the solution of very many of the serious problems which are confronting our doctors at this present minute depends upon the more complete *education* of the individual doctor who is serving the public.

Up to the present time, we have concentrated our efforts very largely upon giving every educational advantage to our medical students, to the residents in our hospitals, and in some cases to the hospital interns.

In addition to this, in various communities, a good deal of effort has been made toward giving formal postgraduate education to those who are so situated that they can avail themselves of the opportunities as students devoting their full time to this end.

I wish now to make a plea for the forgotten man, to whom in an educational sense this term is quite applicable. I am strongly of the opinion that there is a large group of men practicing medicine in this and every other community who are entitled to a help that they have not as yet received in the direction of their continued education while they are serving the public as practitioners and dependent upon this service for their livelihood.

It is not so long ago that many of our larger hospitals looked askance at the conception that their function went beyond the rendering of service to sick individuals and that they had a definite and determining responsibility toward medical education. Thirty years has revolutionized this viewpoint and now practically every well conducted hospital attempts to a greater or less extent to take a part in the education of medical students, their interns and their residents. I am sure that the time is now at hand when these hospitals and the universities with which they are associated must recognize that they have a still further responsibility and must so formulate their policies that they will be active participants in the continued education of the practicing doctor who may or may not have an official affiliation with their institution.

If one will give thought to the enormous educational facilities that exist in this city, it becomes easily apparent that they are ample to provide an increasing amount of education of this kind.

It is impossible to fail to recognize that the doctors themselves would receive such educational opportunities with enthusiasm. This Fortnight is strong testimony to the truth of this statement. You gentlemen are not going to make the effort to utilize an undertaking of this sort unless you see an educational value in so doing. It is also ample testimony that there are many men in this city who recognize their responsibility for this type of teaching because of the great effort that has been expended in making these Fortnights a success. You are here to see the completed program. Had you been here during the last six months

and able to appreciate the enormous amount of work that many individuals have done to set up the program, you would understand that men do realize the necessity that confronts us.

If you will visit our library any afternoon or evening during the year, you will have ample proof that our doctors are doing their best to educate themselves insofar as a library will permit.

It remains for us to convince those in authority in our large institutions of learning that they have a great obligation to carry forward this work. This Academy is definitely committed to the undertaking and I promise you that so long as I have any influence or activity in its counsels, the matter shall receive constant consideration and that all of the prestige of the Academy shall be utilized in setting up a program whereby the continued education of the practicing doctor will be so available that no member of our profession will have an excuse for lack of education because of lack of opportunity.

The particular subject which the Committee has selected for our consideration during these two weeks is one that vitally concerns every member of our profession, no matter in what field he is working and equally affects every member of our community. We will hear statistical evidence that cancer is a dreaded enemy of our welfare. It will be pointed out to us probably that so far as can be determined its incidence is on the increase and that a constant fight must be made unless we are to suffer serious disaster at its hand.

There are thousands in our city who are asking themselves the question, "What is being done about this situation?" We may point out to them that the profession and its associated scientists are bending their constant effort to solve the problems connected with cancer.

In the last analysis, the solution that every one of them has in his mind is the finding of those facts or those factors which will lead to either a prevention or a cure of cancer.

That the best scientists in the country have been willing to come here and discuss these problems over this period of two weeks is ample evidence to the public that we are not unmindful of this necessity.

Two weeks is a very short period in which to profit by all the lessons that are so beautifully set forth in the demonstrations that are being conducted. However, an answer to many of the problems that constantly confront every practitioner will be found in these cases. It is impossible that you men will be able to leave this Graduate Fortnight at its termination without having had called to your attention much that will be of the utmost value in your daily work.

This should be an assurance to the public that the profession and its associated scientists are on the firing line and that insofar as human endeavor is able to achieve accomplishment, such accomplishment will be achieved.

There is no need for discouragement. Cancer is a dread disease. Few of us have been completely free from some personal evidence of this fact. However, it is not true to say that no progress has been made simply because neither the cause of cancer nor the cure of cancer is known. Great progress has been made toward the final determination of these. It may be too hopeful to say that either the cause or the cure will be demonstrable facts at any early or given time. It is not too hopeful, however, to say that great progress has already been made, that we do know curative means in many forms of cancer, that the fight is being successfully waged along many fronts and that cancer in some of its aspects has been robbed of the dread that formerly attached to it.

Every doctor of long experience can point to a large number of individuals who have suffered from cancer and who have been definitely and finally cured of it by means now at our disposal.

Our problem has been formulated, our attack is being

made, our successes are not meager and, therefore, our hope should far outweigh our discouragement.

As you listen to these various papers and as you study this great collection of material, you will be strongly impressed with the fact that much of our knowledge has come from intensive laboratory work, that it has been necessary to closely correlate the practicing physician and surgeon with the investigating scientist. You will be impressed with the fact that very much of our knowledge has already come from the work of both physicians and scientists in other fields along the lines of animal experimentation. Without such an opportunity, it is more than evident that a great deal of our knowledge and a great deal of our ability to cope successfully with these problems would not be available.

The public is vitally interested, as has already been pointed out, in this subject and it must therefore be vitally interested in understanding that the hands of scientists and doctors must not be in any way tied by depriving them of any possible means of unravelling the puzzling elements in this situation. The doctors must work among their patients. The scientists must work in their laboratories. Both must avail themselves of the disease as it exists in human beings and in animals. Any curtailment of these opportunities is a definite threat against what society has a right to expect from those on whom is placed the responsibility of this work.

THE HISTORICAL DEVELOPMENT OF THE PATHOLOGY AND THERAPY OF CANCER*

HENRY E. SIGERIST
Baltimore

When we study the history of a disease, we can and we have to approach the subject from entirely different angles. The first question we have to answer will be about

*Delivered before The New York Academy of Medicine, October 20, 1932.

the occurrence of the disease. We want to know how old the disease is, how far back it can be traced in history, when it was first observed, and when it was first described. At the same time, we want to know where the disease occurred, whether it was a wide-spread disease, or whether it was distributed in certain definite countries. And finally, we want to know whether the disease had the same characteristics in ancient times as it has today, or whether it changed its character, as has happened in many cases. In order to solve such a problem, we have to investigate all the available literature, medical or non-medical, and whenever possible, we will study the human remains, the bones, and the soft tissues of Egyptian mummies.

After we have ascertained the occurrence of the disease, the next problem that interests us is to know how the disease was treated by the physicians in different times, what the doctor did in order to cure the disease, and eventually to prevent it, and what results were obtained by definite treatments. Therapy in early times was chiefly empirical. Guided by instinct, men tried out all kinds of drugs, all kinds of dietetic treatments, in order to cure the disease. A vast knowledge was acquired in this way. And in many cases drugs were discovered that we still use today. Therapy, however, was not always merely empirical. In many instances it was directed by theoretical consideration. Even in former times we find a strong need for causality. The origin of disease and its mechanism had to be explained. The facts observed, the clinical features were so numerous that a theory proved necessary in order to understand the facts, and to master them.

This point leads to a third approach in studying the history of a disease. After we know when and where the disease occurred, and what was done to fight it, we want to know what the doctor thought of the disease—what views he had on the nature of that particular disease.

The history of pathology has to deal with different groups of diseases. There are diseases that are extinct today, as for instance the "sweating sickness." In such a

case we study a purely historical phenomenon. We have no observations of our own—we have to rely on observations made by other people and transmitted to us in literature. Now, there is another group of diseases, the clinical features of which were very well known centuries ago, of which, however, the cause and the pathological mechanism were discovered only in recent times. This is the case for most contagious diseases. When we study the history of these, our superior knowledge helps us a great deal in tracing them through medical literature. The history of such diseases has come to a certain close. They still exist, but we know them, and we know how to fight them. It appears to me that in the history of all diseases we can distinguish three different phases. The first might be called the empirical and speculative phase. The disease is known in many of its clinical features, and it is treated by empirical means with more or less success. Then comes a second stage when the cause and mechanism of the disease is discovered, and finally we have the third and last stage when on account of that knowledge the disease can be combated more successfully. In the history of tuberculosis, for example, we have reached this last phase. Through the discoveries of Koch and many others, we have a thorough knowledge of the disease, and I have no doubt that we will get rid of tuberculosis some day, as it is much less a medical than a social and economic problem.

Finally, we have a last group of diseases, the true nature of which is still unknown, and for which we still have no satisfactory cure. And this is the case with *cancer*. The medical historian, in tracing the history of cancer, has a very unsatisfactory task. I cannot tell you of high spots in the history of cancer, of periods of great discoveries, of waves of enthusiasm, as were observed when Koch discovered the tubercle bacillus, or Schaudinn the spirochete, or when Ehrlich brought out his salvarsan. The history of cancer is a dry history of errors and of many disappointments. The history of cancer is still in its primitive stage. The disease is still among us, threatening human society more than ever, and the fact particularly bewildering is

that we are facing a biological problem that doesn't fit into our general biological conceptions. However, even in such a case, a historical survey might prove of some interest. There might be some enlightenment, even in the history of errors. And after all, is there not heroism in the lost battle also?

First of all, it certainly is important to ascertain that in all probability malignant tumors occurred at all times and everywhere. Whenever we find medical documents, the Egyptian papyri as well as the cuneiform tablets of Babylonia, or the manuscripts of old India, we find descriptions relating to malignant tumors. And what is more important, we have bones of early historical man, showing evidence of such tumors.

In the medical literature of the ancient Orient, references to malignant tumors are scarce. And yet there is one very important passage in the Papyrus Ebers, a papyrus written in the 15th century B.C., where a tumor is mentioned, and where it is said that such a tumor must not be touched, meaning that in such a case treatment might prove fatal.[1] It is obvious that we have no statistical data as to the frequency of tumors in antiquity. Such diseases, however, were certainly not rare—they must have occurred rather often because in the Greek medical literature we find a great many references to them. In the Hippocratic collection, already, we find a great many such references. Then, in the works of Galen, in the second century A.D., there are hundreds of passages devoted to cancer and other tumors, and besides, he wrote a special monograph on tumors, our most important source. From the Middle Ages on there is not a single surgical book that has not at least one chapter on the subject.

The descriptions we find in the ancient medical literature are by no means unequivocal. In many cases it is quite impossible to decide what kind of tumor was meant. How can it be else? An accurate distinction of the differ-

[1] *Papyrus Ebers*: translated by H. Joachim, Berlin, 1890. p. 198.

ent kinds of tumors was not possible as long as there was no microscope. And even then the cell had to be discovered, and the foundations of histology laid. Our systematization of tumors presupposed the work of Bichat, Schwann, Johannes Müller, Virchow, and others. Even today the diagnosis might be difficult in many cases, and we know how often we are obliged to make an excision in order to make up the diagnosis microscopically.

We must try to realize the situation in which the ancient physicians were. What did they see? They saw a swelling on the surface of the body—a swelling that grew, and occasionally ulcerated. They observed that there were such swellings that had an inflammatory nature. They were red, hot, painful, and the patient was feverish. They observed further that such swellings might turn into pus. But then they saw swellings with entirely different characteristics. These too grew, but they grew much more slowly. Some of them felt soft, just as does the fatty part of the body, and proved to be harmless so far. Others, however, were very malignant, and Hippocrates called these *karkinos,* or *karkinoma;* when they felt particularly hard he called them *skirros.* There was no cure for such a disease.

As long as one did not practise dissection of cadavers, the superficial tumors only were observed. And it was chiefly cancer of the breast that attracted the physicians' attention. Its crab-like appearance was responsible for its name, according to Galen. But by and by tumors were seen in hidden places also, as for instance on the cervix uteri, and in the anus. Sometimes tumors were felt in the abdominal cavity, and by analogy it was assumed that these must be tumors similar to those observed on the surface.

So, one result of the historical investigation is that cancer, malignant tumors at large, represent a disease general to mankind. It is not restricted to any country, race or period, but is a disease of the adult individual, just as are the diseases of the circulatory apparatus.

To trace the history of cancer in ancient literature is very difficult, chiefly because the nomenclature is confused. The same word signifies different diseases, in different authors. We must never forget that Greek medicine had a history of a thousand years, and that the conceptions we find in the Hippocratic writings were modified to a very large extent by the subsequent developments. Another reason why the identity of a disease described in antiquity is difficult to ascertain is that most Greek schools had a conception of disease very different from ours. They did not consider and describe diseases as a morbid entity, but described them as merely symptoms or groups of symptoms. It will be the task of investigators to examine the whole Greek literature very carefully in order to find out what the actual knowledge of the Greek physicians was in the case of cancer.[2]

What was the ancient therapy of such disease? In many cases the most salient feature was the ulcer, and the same treatment was applied as was used for other ulcers. Drugs, and chiefly metallic salts—salts of copper, and lead, then sulphur and arsenic were applied—preparations that proved efficient in other cases, and helped in the formation of granulations. Such treatments were recommended from Hippocrates on, even to our days. Sometimes the author reported that he had good results, and that the tumor was cured. But now, of course, we now that such a tumor in all probability was not cancer. Most of the ancient authors, however, did not expect much of such remedies, and tried other cures. They tried to destroy the growth either by cauterization, or then they cut it out with the knife. But these operative treatments gave bad results, too. They did so because the surgeons had not the pathological-anatomical knowledge, nor the operative technique necessary

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[2]The Book of Jacob Wolff: *Die Lehre von der Krebskrankheit,* (Vols. I, II, and III. Jena, 1907-1913.) is very valuable for the more recent period. In the chapter dealing with antiquity the author generally uses secondary sources, and is far from being satisfactory. I hope to publish a paper on this subject in the not too far distant future.

for such radical operations. They resigned, and the resignation of the most outstanding physicians in antiquity is perhaps best expressed by Celsus, in his famous Encyclopaedia. He says, "Some physicians used caustic remedies. Some cauterized, and others operated with the knife. The remedies, however, never did any good to anybody. On the contrary, by cauterization the tumors were activated, and grew the faster, until the patient died. When they were cut out they came back after the scar had been formed, and brought death also. To distinguish a benignant tumor that can be cured from a cancer that cannot is hardly possible. All we can do is to watch and see what will happen."

In spite of the resignation there were always surgeons who tried to help the patient by operating on him. Celsus himself recommends the operation, in some cases, for instance, for tumors of the lips, and an Alexandrian surgeon of the second century A. D., Leonides, seems to have had a method of operating on cancer of the breast. He operated only when the tumor was not too far advanced. He amputated "a sanis partibus," and cauterized the whole wound.

The pessimism, however, prevailed for many centuries. A Salernitan surgeon, Roger, tells us that he sometimes saw cancer of the uterus operated, but without any result; on the contrary, the patients died much sooner than they would have done without any treatment. And a century later another great surgeon, Lanfranchi, makes the very reasonable statement that cancer must not be touched if it grows in parts of the body that are "nervis, venis, et arteriis intricatis." They all agreed that only radical operations on an early growth would have any success; but radical operations at that time without satisfactory anesthesia, and without the means of preventing infection, were hardly possible. Whether a cancer was operated or not depended chiefly on the temperament of the surgeon, the results in both cases being nearly the same, with very few exceptions.

The history of the therapy of cancer is very dull. The

principles we are following today, namely, the elimination of the tumor as radically as possible, were discovered in far remote antiquity. Our operative methods are much more efficient than theirs were, and besides the knife we have X-rays and radium to destroy the tumor cells, but we have not found any new principle yet.

And now to the problem, what did the physicians think of cancer? How did they explain the phenomenon of swelling? It is obvious that the theories of cancer were in accordance with the general pathological conceptions of the different periods. If I were to trace the history of the cancer theories in detail, I would have to trace the whole history of pathology. So all I can do is to point out some of the most important theories. Greek medicine distinguished three different kinds of growths. One "secundum naturam," was the physiological growth, the growth of the developing organism, the growth observed in the pregnant uterus, or in the physiological swelling of the breasts. Another was the growth "supra naturam," a growth pathological only in its quantity, as happens for instance when a callus is formed after a fracture. And finally there is a growth "praeter naturam," an abnormal pathological growth—the growth of the tumor.

According to the physiological theories of Galen, who developed and systematized the Hippocratic views, there were four "humours" in the human body—blood, phlegm, black, and yellow bile. If they were well balanced, man was healthy. A disturbance of this balance meant disease. The theory of the four humours was not bad at all. It explained a great many facts, and as a working hypothesis gave quite good results. In the case of tumors, obviously there too, the balance had been upset. Which humour was responsible for it? Galen thought that it was the black bile. Why? It seemed to him that people in whom the black bile dominated physiologically were disposed to tumors. It was believed that the black bile became thickened, and that in this way the tumor originated.

The Greek pathologists knew that in the human body

there is a natural healing power that endeavors to restore the lost balance of health. In all inflammatory processes, the way this healing power works seemed perfectly clear. The inflammatory swelling turned into pus, and the pus was drained out. In this way the "materia peccans" left the body, and the balance was restored. In the case of cancer, however, it seemed that the healing power of the organism did not work. There was no natural healing of tumors. The doctors' rules usually followed to help the organism in its healing tendencies could not be followed in this case. So in antiquity as well as today cancer did not fit into the general pathological conception. It was a puzzling problem for which satisfactory explanations could not be found, although Galen and many others did not admit it.

This theory of Galen's had consequences for the treatment also. Cancer, being the result of a disturbed mechanism of the humours, having therefore an internal constitutional origin, had to be treated internally too, and indeed Galen describes a certain diet to be followed by the patient suffering from cancer. Moreover, by applying purgative remedies and bleeding the patient, he endeavored to influence the humours. Galen's theories survived as long as the theory of the four humours did—that is, throughout the Middle Ages, the Renaissance, and far into the 18th century.

In the 17th century, however, a new explanation was sought for, according to the new pathological conceptions of the time. The discovery of the lymphatic vessels played a very important part. One thought that it was the lymph that carried the cancer material, and more than that, the lymph was responsible for the gathering of tumors. The vague hypothetic humours of Greek medicine did not satisfy the physician any longer. These had achieved much in the realm of science. The carriers of the balance of health were no longer thought to be the humours, but rather the physical forces, and chemical substances. And such a substance was that lymph. Alterations of the

lymph—its thickening or coagulation—might be responsible for the origin of cancer. The French school advanced this theory, as did John Hunter, and this theory brought further new improvements in the treatment that resulted in operating on or removing the lymphatic glands, and destroying the lymph vessels in the area surrounding the tumor. The operation became more and more radical, as for instance in the case of the cancer of the breast, where the pectoralis major was removed, as it was feared that it might be affected by the lymph.

Particularly interesting are the views of John Hunter, a man we appreciate the more we study his works. He, too, believed in the theory of the coagulated lymph. But his conceptions are not the naive mechanical ones of the past century. They are entirely biological. Cancer to him is a part of the body comparable to an organ. It is nourished by the vessels of the organism. And therefore he tried to isolate the tumor by compressing the blood vessels leading to it, or by making ligatures.

The lymph theory, however, was not satisfactory either. Doubts were expressed, chiefly by Morgagni. In his dissections he found a great many tumors, and was convinced that they were more than the result of the coagulation of the lymph. And yet he could not find any better explanation. In 1773 the Academy of Lyons offered a prize for the best answer to the question "What is Cancer?" A young man by the name of Bernard Peyrihle got the prize for a thesis that gives a very good summary of the knowledge of the time. "There must be a special cancer virus," he said "that is responsible for the alteration of the lymph." He tried to make experiments. He injected cancer material taken from a cancer of the breast, into a dog. Unfortunately, the experiment did not come to an end. The dog barked so terribly that it was killed by the doctor's landlady.

In 1802 a society for investigating the nature and cure of cancer was founded in England. It issued a questionnaire that was sent to all prominent physicians, the ques-

tions of which could not be more sensible. "What are the diagnostic symptoms of cancer?" "What is the nature of cancer, principally its pathological anatomy?" "Is cancer a primary disease or can cancer develop out of other diseases?" "Is cancer hereditary?" etc. . . . Unfortunately the society was disbanded four years later without obtaining any significant results.

It was too advanced for the times. In 1802, the year that this committee was appointed, a man died in Paris who opened new horizons for pathological research, Xavier Bichat. His ways had to be followed in studying the problem of cancer, and this meant investigation of the tumors by the new methods of pathological anatomy. The French school followed Bichat's path, and did some creditable work on the subject. Laennec was the first to differentiate between homeoplastic and heteroplastic tumors. While scirrhus was often regarded as a pre-cancerous condition, he described it as a tumor of its own, as a growth of the connective tissues.[3] Then the cell theory was established and Johannes Müller applied it to the tumors. Cancer was described by him as the result of specified cell-formations within the connective tissues of an organ. Virchow's work followed in the middle of the century. He described the heteroplastic tumors as proliferations of the connective tissue cells as a reaction against some kind of irritation. Thiersch and Waldeyer brought important modifications to Virchow's theory, and then Cohnheim established the theory of the congenital foundation for cancer. The 20th century finally was devoted chiefly to experimental research that was made possible by great advancement in physiological chemistry.[4] Today we know infinitely more of the biology of cancer than ever before. And yet the problem is still unsolved. In the last 50 years, a great many theories were brought forth, but they all proved to

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[3]See Fielding H. Garrison's excellent editorial on the history of cancer in this Bulletin (1926, 2nd series, Vol. 2, No. 4, pp. 179—185).

[4]Experimental Cancer, an Historical Retrospect. (From the laboratories of the Philadelphia General Hospital), by E. B. Krumbhaar, Philadelphia, Penna. *Annals of Medical History*, Vol. VII, 1925.

be wrong. Our therapy is much more efficient today than it was before this time, and yet we have not found anything new. We have followed the principles and improved on the methods that the Greeks already had, and our results are far from being satisfactory. I remember the great Berlin surgeon August Bier said to me one day, "If a great scientist at the end of a brilliant career wants to make a fool of himself, he takes up the problem of cancer." This, unfortunately, happened in many cases. And yet, the stronger the enemy, the more energy and the more intelligence we will have to develop in order to uncover his face and to fight him.

I personally have the feeling that the problem of cancer is not merely a biological and laboratory problem. But it belongs to a certain extent to the realm of philosophy. This, an "X" in the pathology of cancer, is a principle we do not understand yet. While we can understand most pathological processes as defence reactions or as healing processes, here we are facing a fact that does not fit at all into our general biological conceptions. Fortunately, we have overcome the speculative era in medicine. We know that a theory is not true by the mere fact that we think it to be so, but it has to be demonstrated and proved experimentally. And yet all experiments require certain philosophical preparation. And I have the feeling that in the case of cancer many experiments were undertaken without the necessary philosophical background, and therefore proved to be useless.

The Wesley M. Carpenter Lecture

FUNDAMENTAL RESEARCH IN CANCER*

FRANCIS CARTER WOOD

Just what is the nature of the fundamental research on cancer which is going on in a few laboratories in various parts of the world is but little understood by the average

*Delivered before The New York Academy of Medicine, October 20, 1932, in connection with the fifth annual Graduate Fortnight.

layman, or even by the profession. Both are confused by the usual weekly press notices of a new "cure" for cancer, and the layman learns, if he takes the trouble to inquire of his physician, that such announcements are usually of but little importance, but are compounded as a rule of hasty and imperfect observation, combined with a strong desire either for fame or money. The average life of these "discoveries" is rarely over a year. By that time most of the ignorant who have offered themselves as experimental animals for a hypothetical cure are dead or are dying, and when the knowledge of the uselessness of their sacrifice becomes public the "cure" disappears. The medical profession can only continue to rehearse the fact that the effective cures are surgery and radiation.

The average person who sees that considerable sums of money are being used to support cancer research wonders why no striking discoveries as to cure are reported from such institutions, and is apt to point towards the marvels of the telephone, the telegraph, the electric light and the radio as evidence that something must be wrong with the investigation of cancer, and if only sufficient money were available and enough pressure could be brought upon those studying the problem, that a cure should be produced in a short time. These people entirely confuse invention with discovery. The fundamental discoveries in physics which led to the development of the telephone and the radio were available many years before the inventor applied them to practical purposes. The principles which underlie an invention in these fields are, as a rule, relatively simple. They concern phenomena which can be produced in wires by electric currents, and are always reproducible under given conditions, and given a definite amount of industry and sufficient money, the practical development could be expected in a reasonable length of time. A somewhat similar condition exists in one phase of medicine, that of the infectious diseases, for since Koch and Pasteur laid the foundations of bacteriology in the seventies and eighties, many diseases have come

under control, either through prevention of infection, or direct attack by curative sera. We only have to mention diphtheria, lockjaw, typhoid fever and pneumonia. So far the control of pneumonia is imperfect, but inasmuch as serological technique is relatively simple and its principles are well known, it is merely a question of time, patience and money before pneumonia will be a disease curable by serum.

The cancer problem is entirely different. Here the student is dealing with not one disease, but a group of diseases, each one of which may have a variable group of causes. It is a disease which arises in the body itself, and does not apparently always require an outside agent to produce it, but may appear on a predominantly hereditary basis. In other types heredity seems to play no part. It is not due to germs, so that the knowledge of bacteriology does not help us in attacking cancer. It is a disease which appears in people apparently perfectly well. It may even be born in a child. As far as we know, the disease is one of life and growth, resembling in many ways the growth of a child in the womb, and yet more closely related to the mother than a child, for cancer has no father, only a mother, and the mother is the tissues of the body which in some way change so that the microscopic cells which compose these tissues can grow uncontrollably. Therefore cancer is a part of our own bodies, and being derived from them, it obviously cannot be very different from the healthy cells from which it grew. Hence it produces no reactions in the body other than those which the unborn child produces. Strange to say, cancer may give the same test which is given for pregnancy, that is, the child is a mass of growing tissues and causes certain changes which may lead to the early detection of its presence; so cancer is the same, and the Aschheim-Zondek test for pregnancy may be given by a man with a cancer. All this has been said to illustrate the fact that what we have learned from bacteriology concerning the reactions in the body produced by foreign cells entering and setting up disturbances is not

applicable to cancer, because cancer cells are not foreign. An illustration of the difficulty of the situation is that certain metals like lead may destroy the child in the womb and bring about a miscarriage. The same lead, while it may prove effective in curing a few tumors, is not as powerful in its destructive action on them as it is on the unborn child. The cancer problem, then, is as we now face it a problem of endeavoring first to do the best we can in obtaining cures by current methods which we know are effective, that is, surgery and radiation. The improvement in the technique of these methods is a just basis for research, and is carried on in every hospital where cancer patients are treated. We know at present that the limits of surgery have been nearly reached, and societies like the Society for the Control of Cancer are endeavoring to educate people to go early to physicians so that the growth may be diagnosed at a time when it is small and curable. Strenuous efforts are being made in clinics to develop the effectiveness of radiation treatment. But none of these methods, no matter how perfect, will ever cure even half the patients with cancer. If this be the case, the second phase of the cancer problem then must be that of fundamental research as to the nature of the disease or diseases in the endeavor to find out why it begins, how it grows, and what will check that growth.

There is no evidence that surgery, radium and x-ray will ever be 100 per cent cures for cancer, and the obtaining of this 100 per cent cure is the object of the fundamental investigation of cancer. This investigation uses the experimental machinery already set up by the modern sciences, in other words, it employs the methods of chemistry, of physics, and of biology. The success obtained in these sciences has been wholly due to simplification of the condition of the experiment. Laws are discovered not by studying the complex. Physics and chemistry are used in analyzing the structure and composition of the cell, both those healthy cells which make up the body and the diseased cells which form a cancer. At present it is necessary

in many of such studies to use cells of certain insects, such as the fly, *Drosophila*, or even the eggs of certain of the marine animals, like the starfish or similar creatures. We want to learn why a cell divides, for the rapid dividing of cells is what makes a cancer grow. That fact cannot be determined on a human being or on a mouse. We must simplify the experiment by using a cell which is free living so that it can be observed under the microscope. The cell must be able to stand rough treatment, so that it can have chemicals injected into it, or be subjected to electrical stresses. Such investigations have been going on for many years in institutions like the Marine Biological Station at Wood's Hole, or that in Naples, and a number of other places. The fact that the electrical charges in cells are altered when a cell divides; that the permeability of its cell wall changes during division; that its contents undergo remarkable alterations; that its reaction may be determined by injecting a dye into the cell, using a minute glass pipette while the cell is watched under a high power microscope (thus certain simple cells have small areas where acid collects, which no doubt forms the precursor of the digestive juice); that the reaction of the cell may be changed by varying the amount of the oxygen which it receives, etc.—all these things have been learned from what we may term biophysics or biochemistry of the cell, that is, a mixture of the three sciences. Such mixtures of scientific specialties are proving exceedingly fertile in discovering things about cells. In other words, every biological station in which sea-urchin eggs are being studied is in a sense contributing to the cancer problem, for we must remember that the cancer problem is a problem solely, so far as we know it, of the division and continuous growth of cells. Ordinary analytical chemistry destroys the substance which it analyzes, and therefore has told us little about the cells. We know that certain metals exist in the body and in tumors in minute amounts. Some are probably accidental and derived from the food. Among these are silver, lead, chromium, arsenic, titanium, zinc, lithium and rubidium. Copper and iron play an important part in

keeping the blood up to its standard level, while sodium, potassium, calcium and magnesium are essential to life. We know the cancer cell contains more water and more potassium than the normal cell. We know that it usually breaks down sugar in a way different from many normal cells. Yet it contains ferments which normal cells contain, and in fact, the more we investigate, the more we find that the cancer cell in its composition and its ordinary activities, which we are capable of studying, does not vary essentially from similar normal cells growing at the same speed. It is probable, though not certain, that before we can find a means of stopping the growth of a cancer cell, we must find a means of making it grow, or find the reason why it grows. This leads to the problem of various regulatory substances in the body known as hormones. Everyone knows that if a certain gland does not secrete, the child becomes an idiot. Another gland secretes too much, and the child grows into a deformed giant. When, however, we study the cell under the influence of these glands, we find that the cell does not grow large or become dull and idiotic under the same conditions as the body does, and that the cancer cell, so far as we know, is independent of such controlling influences. That is probably why it is a cancer cell. But how and why?

Much work has been done on the relation of cancer cells to vitamins and diet. Apparently these play but little part in the life of the cancer cell. It seems to be able to obtain food in competition with the body cells so that the patient may be dying, while his cancer grows, and the removal of vitamins from an animal bearing a cancer, while it may keep the cancer from growing very well because the animal is sick, nevertheless no removal of vitamins will stop the cancer. The question has been raised whether the cancer does not make its own vitamins.

It will be seen from this discussion that every angle of attack leads but to fresh problems. All of this research work which has been so far mentioned must be carried on. Thus far a few general directions in which fundamental

cancer research has been pursued have been discussed. It is obvious that the fundamental conditions of the life of a cancer cell cannot be learned from the study of human beings. In the first place, human patients bearing cancer cannot be experimented upon. They must be given the best treatment that is known to science. It is therefore necessary to use animals having cancer. Fortunately they have practically all of the varieties of cancer from which human beings suffer, and fortunately also it has been found that many of these cancers in albino rats and mice can be transplanted by the injection of a few cancer cells under the skin of an animal, after which, in a longer or shorter time, a tumor of exactly the same sort as that originally injected will appear. This important discovery was made simultaneously in 1891 by Dr. Leo Loeb, now in George Washington University, St. Louis, and by Professor Jensen, of Copenhagen. It immediately permitted a very large series of studies to be made upon tumor cells growing in what may be described as a living test tube. That such grafted tumors are exactly the same as a primary human tumor no one has assumed. Neither has anyone assumed that a culture of tubercle bacilli in a test tube was tuberculosis. Nevertheless, a large part of our advance in the knowledge of tuberculosis has been made by studying such test-tube cultures. Transplanted cancer in animals has also been extremely useful in furnishing general facts concerning the biology of the growth of masses of cells. All that has been learned obviously cannot be summed up here, but the most important facts are first that such grafted tumors have similar rhythms of growth which have been observed in human tumors; that if they disappear, which some of them do, the animal may or may not become resistant to a fresh inoculation. After the growth of a tumor has once become well started, the injection of substances into the circulation will not cure it. An enormous amount of routine experimentation along this line of what may be called the Edisonian type has been carried on in the last twenty years. Almost every known aniline dye, many of the alkaloids, all of the metals and many of their

compounds in solution or a colloidal form, ground up tumor particles, filtrates from crushed tumor cells, extracts from all the organs, serum from animals which have been injected with cancer cells so as to produce an antibody, have all been tried and have failed with only two exceptions. Lead has been shown occasionally to destroy tumors, both in man and animals, but its use is attended with so many dangers and discomforts that it has had to be abandoned, though experimental work is being carried on in the attempt to mask the toxic effect of the lead on the healthy tissues and still leave sufficient poisoning capacity to attack the tumor cells, as is the case with salvarsan. So far nothing has been accomplished in this regard. As the lead is detoxicated, though it may not kill the animal, it becomes less effective on the tumor cells. The other example is that if a powerful antiserum is made against cancer cells by injecting them into an animal of another species, and the serum then placed in contact with a tumor by having the growth implanted in the limb of an animal, the serum being kept in the limb by a light ligature for a considerable time so that the cytotoxic substance may attach itself to the cell, it has been possible to cure inoculated tumors. Such serum, however, is powerless when injected into the veins, as it is detoxicated by the liver and other healthy tissues before it reaches the tumor.

Other important discoveries that have been made from grafted tumors are that massage of such transplanted tumors is extremely dangerous, for it presses tumor particles into the vessels, from which they reach the rest of the body; and another that the careful removal of a piece of a tumor does not increase the number of metastatic emboli to the lungs. Grafted tumors have been also extremely useful in testing alleged cancer cures, and in measuring the doses of x-ray or radium necessary to destroy all the cells of a malignant growth. The use of these inoculated cancers has shown that if they are placed in dense fibrous tissue they may remain inert for a long period, though they do not lose their vitality in any sense. This hints that we may ob-

tain cures by x-ray and radium not so much by direct destruction of the cells, as at least partially by locking these cells up in the atrophic and dense fibrous tissue which is produced by the action of the radiation.

The processes which underlie the immunity to inoculation just referred to are of great scientific interest, as it may open the door to the ultimate prevention of metastases, if not to the cure of the original growth. But this immunity is rather variable and cannot be produced against all tumors, and it should be noted is an immunity to inoculation only, not to growth. An animal which is immune to one tumor may be susceptible to another, and such an immune animal may develop a primary tumor, though immune to an inoculated one. Therefore this type of immunity is not curative, though if we knew more about the biological mechanism which underlies it, some useful lead might be found. Suppose the immunity were found to be due to a simple chemical, as thyroxin and adrenalin have been found to be, then if synthesized a cure might be available. But there is not an atom of knowledge as yet available as to the composition of such immune substances.

These transplanted tumors have furnished valuable and interesting general information concerning the chemical changes in the blood which follow the growth of a tumor, but this is not specific for tumors, because the same changes are found in pregnancy. All attempts on animals with tumors, and also on human beings, have failed to reveal any antibodies of a type which are so useful in the diagnosis of the infectious diseases. This is to be expected, as the cancer cell is not an external parasite of different chemical composition from the body in which it grows. It is this difference in chemical composition of the plants which we call bacteria which incites the chemical reactions which produce antibodies in the body in an effort to neutralize the poison and thus cure the disease. The study of such grafted tumors has covered so many aspects of the cancer problem that further work offers little promise of

valuable return. As has frequently been observed in scientific investigation, the point is reached where a particular line should be dropped and another taken up. Later discoveries may warrant a return to the use of grafted tumors, but at present investigation has become more fruitful in the attempt to produce tumors by irritants of various sorts, such as tar, certain types of lubricating oil, and some synthetic aromatic compounds which possess fluorescence. It was observed that the oils which are carcinogenic fluoresce and have characteristic absorption spectra. By building some simple organic compounds Kennaway and his co-workers have succeeded in preparing very effective chemical producers of cancer in mice and rats. One curious and as yet inexplicable fact has been observed in these irritation experiments, and that is that certain irritants which produce cancer in mice are not effective in rats, and also the reverse. The observation that certain parasites of the cat *Taenia crassicollis,* can induce the formation of tumors in the liver of the rat when the ovum of the parasite was fed, has been of interest, not only as demonstrating the great variety of tumors that can be produced by a single irritant, and some of them tumors of a type which are only normally found in bone, such as osteogenic sarcoma, but the reaction has been of use in studying the question of the inheritability of tissue susceptibility. There seems to be but little question after the fundamental work of Maud Slye that the selective breeding of mice may lead to a high concentration of spontaneous cancer, that is, cancer of which we do not know the cause, in the various organs of these animals, so that she possesses strains of mice which have only cancer of one organ. It is always dangerous to generalize from one material, and therefore it was interesting to take up the study of the possibility of producing by selective breeding an organ sensitivity to a known irritant, and Drs. Bullock and Curtis at the Institute of Cancer Research have been able to show that such a sensitivity can be obtained by selective breeding. This is revealed by feeding the ova of the tapeworm of the cat, and noting the occurrence of tumors in the liver. While rats

would never have sarcoma of the liver if they were not infested by ova, by breeding strains in which the tumor has grown, Bullock and Curtis have been able to obtain evidence that such susceptibility is transmissible and can be concentrated. This type of cancer therefore differs from those observed by Maud Slye in that in her experiments the tumors appear spontaneously. In the work just mentioned the susceptibility must be elicited by a specific irritant. That this susceptibility is local is proved by the fact that the skin of these animals remains resistant to tar painting. A curious fact is that the parasite which will cause a sarcoma of the liver in a rat will not cause it in a mouse, though the parasite will grow in the mouse liver.

We have mentioned above the differences in susceptibility to tar between the rat and mouse. The rabbit also is susceptible to tar irritation; the guinea pig and dog are not, though these animals also have other tumors, but again for a reason which we do not know, guinea pigs have very few cancers, while dogs have many.

Just what these facts will lead to in connection with the human race may not be obvious. Some of them may only increase our knowledge of general biology of the mammalia. Others may sharpen our wits to observe matters which have hitherto not been observed in the human being. An example of this is the cruel human experiment which has been witnessed in the production of bone sarcomata resulting from the ingestion of a radio-active substance. We now know that all this could have been avoided if someone had put the radio-active substance into rabbits and observed them for a sufficient length of time, because these agents produce osteogenic sarcomas in rabbits as well as in human beings. Here the human experiment unfortunately preceded the animal. One practical benefit, therefore, of all these studies in the production of cancer is that they furnish such knowledge of the cause of certain types of cancer as will permit the protection of human beings from irritations of the same sort. For instance, it is only a question of time when lubricating oils used under the

circumstances that give rise to cancer in certain industrial conditions will be purified before use so that the carcinogenic fraction will be removed, as it has been from the medicinal oils.

It will be seen that all this work so briefly cited has been with masses of cells and cells in a certain type of organism provided with supporting connective tissue and blood-vessels—in other words, an organism growing in the body. It is obvious that such an organism reveals only average effects, and of the variations which may exist between the cells and in their personal lives, so to speak, no clue can be obtained from such study. In 1907 Harrison observed the growth of nerve cells of a frog in lymph. Taken up by a group of investigators, notably Carrel at the Rockefeller Institute and Lambert and Haines, of Columbia University, and Fischer in Berlin, the technique has been amplified until it is now possible to grow mammalian tissue, especially that of young animals, with some ease. Obviously this method permits the study of the life of an individual cell and many interesting observations have been made. True, the cell is grown in an artificial culture medium made up of animal plasma. It is therefore not normal, and the results obtained from such observation must be critically judged. Nevertheless, it seems to be the only procedure available at present by which the biology of the mammalian cell can be studied with the same technical facility as that of the sea-urchin egg. The experimental conditions, as has been stated, are immensely more difficult than with the simple free-swimming ova, which have led to our knowledge of the mechanism of mitosis, the electrical and chemical reactions in the cell, and many kindred phenomena. Perhaps the most practical thing which has come out of such studies was the demonstration that the lethal dose of x-ray and radium for such growing cells, both of an animal tumor and of connective tissue, was approximately the same as that of a tumor growing in the animal. In other words, rapidly growing normal cells and rapidly growing tumor cells are about equally sensitive. Fortu-

nately for the therapy of cancer, healthy connective tissue cells are not growing rapidly, and therefore are more resistant to these physical agents than cancer cells, and there is in some instances a sufficient differential between the lethal dose of the cancer cell and the lethal dose of the normal cell to permit the destruction of the former without irreparable damage to the latter. This observation showed that the radiation destruction of a cell is not dependent upon any reaction of the host in which the cell is placed other than some circulatory insufficiencies induced by damage to the blood vessels. In other words, there is no immunity produced by the healthy cells which aids in the destruction of the cancer. This of course fits with the reasoning given above as to the fact that the cancer cell is a part of the body and differs from the normal cell only slightly. However, a sufficient number of interesting observations has been made to justify the hope that this method will be of great value when the technique is perfected so that we can grow human adult tissues freely. Among these are the final proof that cells of the lymphocytic group form fibroblasts; that cells of the liver and also the reticulo-endothelial system form bile; that the kidney cells make urea; that the heart muscle beats without nerve supply; that the phagocytic cells live off the tissues which they consume, while other cells obtain their growth material from the tissue lymph; that the sugar consumption of many growing cells is very high and may assume two forms, that is, glucose may be split into carbon dioxide and water, or split by way of lactic acid which is later oxidized in the liver. These are facts of interest obviously only in general physiology, and are not yet applicable to the problem of cancer, but when, as has just been said, human normal tissues and cancer can be grown frequently and continuously a field will be open for a great deal of research. Only one example need be mentioned, and that is the radiation sensitiveness of tumor cells *in vitro*. A far more accurate measure of the amount of radiation necessary in the treatment of human cancer than the clinical experience obtained by treating growths of which only the micro-

scopic morphology is known, and concerning which therefore we have not the slightest biological information, should be obtained by this method. If such tumors could be tested while growing in culture, the information would be extremely valuable. Unfortunately even the cultivation of adult connective tissue is not easy, and the adult connective tissue from a given organ may vary greatly in different persons. Perhaps there exists a number of different kinds of connective tissue, in the thyroid for example. At any rate, the cultures from different glands show great variation in their growth and survival rate in a standardized medium. It has been said that a single irritant may produce a great variety of tumors in the liver of a rat (some of these types are illustrated in the exhibit). Is it possible that the liver may contain a great variety of connective tissues, and that the morphology of a tumor ultimately depends on which type of cell is irritated and starts to grow, in other words, which type becomes cancerous first? Evidently the primary cell from which the osteogenic sarcoma of the liver arises is different from that of the large polyhedral cell sarcoma and also different from that of the small spindle cell sarcoma.

The question as to why a person has one kind of tumor or another daily arises in clinical medicine, and the answer will only come from the laboratory by just such studies as these. The old-fashioned chemistry, as has been said, has contributed little of interest to our knowledge of cancer. The more recent type of biological chemistry in the hands of Warburg, for instance, has shown the differences in glycolysis which we have mentioned. Studies are going on of the relation of certain sulphur compounds to tissue growth. It is interesting to see that these sulphur compounds may stimulate normal regeneration, but do not stimulate tumor growth, as though the tumor cell was growing at a maximum rate, in other words, that its auto-catalysis is 100 per cent. Will compounds related to these which stimulate cells check the growth of the cells? That is a line at present being investigated. It may check them in culture, and not check them in the growing body. This is an essential

fact, for though the pituitary may cause an overgrowth of the bones and tissues in acromegaly, the pituitary does not stimulate to any degree either tissue cells growing in culture or tumors growing in animals. Neither does thyroxin, which stimulates metabolism, increase the growth rate of cells in culture or increase the growth rate of tumors in animals. Thus what may be true of a complete organization is not true of cancer which is an organization independent of the control of the body.

I have said enough to indicate to you that the fundamental cancer problem is one of general biology, as was pointed out many years ago by George Adami, and that while the clinical study of cancer and the morphological classification of tumors is practically useful, it casts no light on the real problem, which is to discover some marked and constant difference between the cancer cell and the normal cell. Until such a marked and constant difference can be discovered, a vague, undirected search for a cancer cure is a waste of time. If such cure is ever to be obtained, it will not be by vague experimentation and injecting everything that can be thought of into the unfortunate patient, but by some revelation in the laboratory which will permit of a carefully thought out program of research, such as Ehrlich developed through many years before he achieved his great therapeutic discovery.

RECENT ACCESSIONS TO THE LIBRARY

Ayrinhac, H. A. Marriage legislation in the new code of canon law. New ed.
N. Y., Benziger, 1932, 390 p.

Beck, A. K. A reference hand-book for nurses. 7. ed.
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Oliver, J. R. Psychiatry and mental health.
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N. Y., McGraw-Hill, 1932, 476 p.

Stocks, H. B. Water analysis for sanitary and technical purposes. 2. ed.
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Straub, G. F. Surgery of the chest.
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Sutton, R. L. and Sutton R. L., Jr. An introduction to dermatology.
St. Louis, Mosby, 1932, 565 p.

Thom, D. A. Normal youth and its everyday problems.
N. Y., Appleton, 1932, 367 p.

Van Es, L. The principles of animal hygiene and preventive veterinary medicine.
N. Y., Wiley, 1932, 768 p.

Zweig, S. Mental healers: Franz Anton Mesmer, Mary Baker Eddy, Sigmund Freud.
N. Y., Viking Press, 1932, 363 p.

PROCEEDINGS OF ACADEMY MEETINGS

OCTOBER

STATED MEETINGS

There was no Stated Meeting of the Academy on October 6.

Thursday Evening, October 20, at 8:30 o'clock
Program arranged in conjunction with the
ANNUAL GRADUATE FORTNIGHT

I. EXECUTIVE SESSION
Election of Fellows

II. PAPERS OF THE EVENING

a. The historical development of the pathology and therapy of cancer, Henry E. Sigerist, Director, Johns Hopkins University, Institute of the History of Medicine

b. THE WESLEY M. CARPENTER LECTURE:
Cancer research, Francis Carter Wood, Director, Cancer Research, Columbia University

SECTION MEETINGS

Section of Dermatology and Syphilology

Tuesday Evening, October 4, at 8:00 o'clock

ORDER

I. Reading of the Minutes
II. Presentation of Cases
  a. Cases from the University and Bellevue Clinic
  b. Miscellaneous cases
III. General Discussion
IV. Executive Session

Examination of cases is limited to members and their invited guests.

Section of Surgery

Friday Evening, October 7, at 8:30 o'clock

ORDER

I. Reading of the Minutes
II. Presentation of Cases
  a. 1. Atrophy of the head of the femur following intertrochantic fracture. Persistent adduction deformity. Fusion of hip joint. End result one year
    2. Acute pancreatitis in a woman. Three operations with final cholecystectomy. Result after eighteen months
    3. Case of "so-called" cyst of external semilunar cartilage of knee joint. Operation and result after two years
    4. Traumatic rupture of spleen. Operation and result after four months, Nelson W. Cornell
  b. 1. Osteomyelitis of left femur with multiple bone foci
    2. Burns of left arm with a double pedicle graft for contracture of the elbow
    3. Multiple gun shot wounds of the abdomen, Margaret Stanley-Brown
  c. 1. Billroth 1 resection of stomach for carcinoma
    2. Billroth 2 resection of stomach in two stages for pyloric tumor
    3. Polya-Balfour resection of stomach for carcinoma, Edward J. Donovan
III. Paper of the Evening

Return of gastric acidity after subtotal gastrectomy and double vagotomy, B. N. Berg; P. F. Shapiro (by invitation)

Discussion, Allen O. Whipple, DeWitt Stetten, Frederic W. Bancroft

IV. General Discussion
V. Executive Session

Report of Nominating Committee:

For Secretary, Ralph Colp to succeed William F. Cunningham, resigned

Section of Neurology and Psychiatry

Tuesday Evening, October 11, at 8:30 o'clock

ORDER

I. Reading of the Minutes

II. Papers of the Evening

a. The histopathology of two angiomas of the brain, Samuel Brock; Abner Wolf (by invitation) (20 minutes)

b. Experimental toxic encephalomyelopathy (diffuse sclerosis), Armando Ferraro (by invitation) (30 minutes)

c. Clinical and pathological notes in two unusual cases of tumor at the base of the brain, E. D. Friedman; Lewis D. Stevenson (20 minutes)

d. Pericapillary encephalorrhagia following the administration ot arsphenamine (so-called Salvarsan encephalitis), Joseph H. Globus; Sol. W. Ginsburg (20 minutes)

III. Discussion

Charles Davison, Samuel T. Orton, Richard M. Brickner, Israel Strauss, Foster Kennedy

IV. Executive Session

Section of Pediatrics

The Section met in Boston on Saturday, October 15, in conjunction with the New England Pediatric Society and the Philadelphia Pediatric Society.

CHANGE IN DATES OF MEETINGS

The October meeting of the *Harvey Society* was held on Thursday, October 13, at 8:30 o'clock, instead of Thursday, October 20, as announced in the first October folder.

Professor Julius Bauer of Vienna delivered the first Harvey lecture of the year on the subject, "The Constitutional Principle in Clinical Medicine."

The October meeting of the *New York Pathological Society* was held on Wednesday, October 12, at 8:30 o'clock, instead of Thursday, October 13, as announced in the folder.

At this meeting Professor Bauer delivered the Middleton Goldsmith Lecture on the subject, "Genetics in Cancer."

Section of Ophthalmology

Monday Evening, October 17, at 8:30 o'clock

ORDER

Program arranged in conjunction with the

FIFTH ANNUAL GRADUATE FORTNIGHT

Papers of the Evening

1. Tumors of the brain, Charles A. Elsberg
2. Tumors affecting the optic chiasm and optic tract, Joseph H. Globus
3. Tumors of the eye and optic nerve, W. Gordon M. Byers, McGill University

Section of Medicine

Tuesday Evening, October 18, at 8:30 o'clock

ORDER

Program arranged in conjunction with the

FIFTH ANNUAL GRADUATE FORTNIGHT

Papers of the Evening

Tumors of the lung, pleura and mediastinum:

1. Medical aspects, James Alexander Miller
2. Surgical aspects, George J. Heuer, Cornell University

SECTION OF GENITO-URINARY SURGERY
Wednesday Evening, October 19, at 8:30 o'clock

ORDER

Program arranged in conjunction with the
FIFTH ANNUAL GRADUATE FORTNIGHT

PAPERS OF THE EVENING

1. Diagnosis and management of bladder tumors, Edwin Beer
2. A consideration of the malignant prostate and associated obstructive manifestations, Joseph F. McCarthy

SECTION OF ORTHOPEDIC SURGERY
Friday Evening, October 21, at 8:30 o'clock

ORDER

Program arranged in conjunction with the
FIFTH ANNUAL GRADUATE FORTNIGHT

PAPERS OF THE EVENING

1. Tumors of the spinal cord, Byron Stookey
2. Tumors of the nerves, Dean Lewis, Johns Hopkins University

Monday Evening, October 24, at 8:30 o'clock

ORDER

Program arranged under the auspices of
THE MEDICAL SOCIETY OF THE COUNTY OF NEW YORK

PAPERS OF THE EVENING

1. Importance of statistics in cancer control, Louis I. Dublin, Ph.D., Metropolitan Life Insurance Company
2. The factors constituting malignancy in tumors, James Ewing
3. Summary of radiologic treatment of tumors with special reference to malignant diseases, Geo. Edward Pfahler, Graduate School of Medicine, University of Pennsylvania

SECTION OF OBSTETRICS AND GYNECOLOGY
Tuesday Evening, October 25, at 8:30 o'clock

ORDER

Program arranged in conjunction with the
FIFTH ANNUAL GRADUATE FORTNIGHT

PAPERS OF THE EVENING

1 Tumors complicating pregnancy, Benjamin P. Watson
2. Myomata and adenomyomata of the uterus, Thomas S. Cullen, Johns Hopkins University
3. The treatment of cancer of the uterus, George Gray Ward

Wednesday Evening, October 26, at 8:30 o'clock

ORDER

FIFTH ANNUAL GRADUATE FORTNIGHT

PAPERS OF THE EVENING

1. Tumors of the mouth and tongue, Carl Eggers

2. Tumors of the stomach, Donald C. Balfour, Mayo Clinic
3. Tumors of the colon and rectum, Daniel F. Jones, Harvard Medical School

Thursday Evening, October 27, at 8:30 o'clock

ORDER

FIFTH ANNUAL GRADUATE FORTNIGHT

PAPERS OF THE EVENING

1. THE BULKLEY LECTURE:
   Consecutive pathological and clinical events in cancer, Harrison S. Martland
2. Tumors of the bones and allied structures:
   Surgical aspects, James M. Hitzrot
   Radiological aspects, R. E. Herendeen

SECTION OF OTOLARYNGOLOGY

Friday Evening, October 28, at 8:30 o'clock

ORDER

Program arranged in conjunction with the

FIFTH ANNUAL GRADUATE FORTNIGHT

PAPERS OF THE EVENING

1. Cholesteatoma, Samuel J. Kopetzky
2. Tumors of the skin and mucous membranes, A. Benson Cannon
3. Hodgkin's Disease, Lloyd F. Craver

NEW YORK PATHOLOGICAL SOCIETY

The Middleton Goldsmith Lecture was delivered at the Academy by Professor Julius Bauer, Vienna, on Thursday evening, October 13, at 8:30 o'clock, on the subject, "Genetics in Cancer."

NEW YORK ROENTGEN SOCIETY

In affiliation with

THE NEW YORK ACADEMY OF MEDICINE

Monday Evening, October 17, at 8:30 o'clock

ORDER

I. 8:30 to 9:00 o'clock
   Demonstration and discussion of interesting cases
II. 9:00 o'clock

CLINICAL MEETING

Each member is urged to bring films of at least one case in which the diagnosis has been proved by operation, autopsy or therapeutic response

III. EXECUTIVE SESSION

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

under the auspices of

THE NEW YORK ACADEMY OF MEDICINE

Wednesday, October 19, at 8:15 o'clock

ORDER

1. Combined effects of drugs and electrical excitation of cortical motor area in cats, H. C. Coombs

2. Buffer influence upon response of striated muscle to caffeine stimulation in fatigue studies, R. H. Cheney
   Introduced by E. Ponder
3. Tobacco sensitiveness in thrombo-angiitis obliterans, J. Harkavy, S. Silbert, S. Hebald
   Introduced by G. Baehr
4. Placental transmission of alimentary anaphylaxis, B. Ratner
5. Occurrence of rough pneumococci in lungs of patients with lobar pneumonia, G. S. Shibley, E. S. Rogers
6. Agglutination of streptococcus hemolyticus by rheumatoid arthritis sera: thermal characteristics of the reaction, M. Olmstead, M. H. Dawson
7. Effect of anterior-pituitary on production of red pigment in salamander *pseudotriton ruber ruber* (soninni), G. K. Noble, L. B. Richards
8. Typhoid agglutinins as influenced by the conditioned reflex in man, N. Kopeloff, M. E. Raney, M. F. Upton, L. M. Kopeloff
9. Mechanism of bacteriophage action in staphylococcus bacteremia, W. J. MacNeal, F. C. Frisbee, A. E. Slavkin

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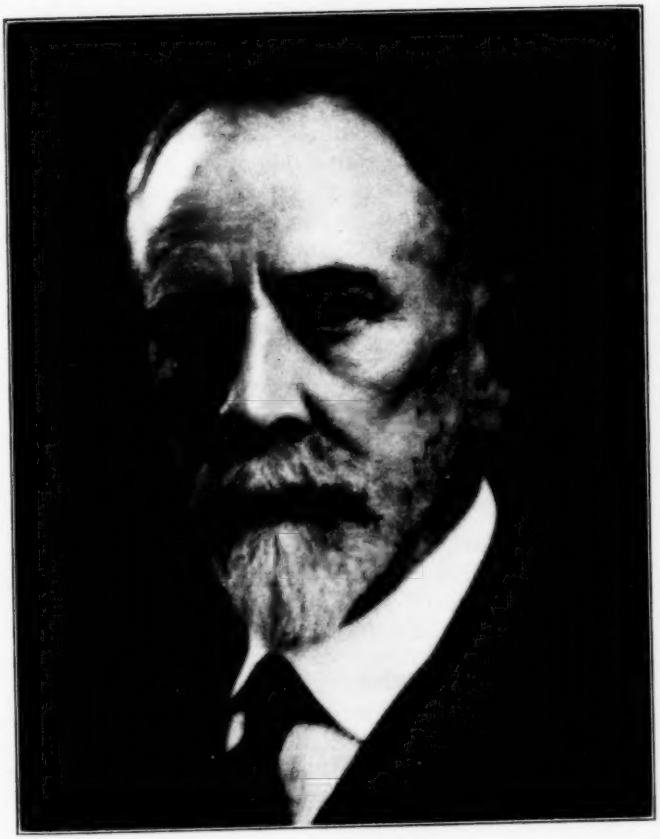
FELLOWS ELECTED OCTOBER 20, 1932

Jackson A. Seward .....121 East 60 Street
Willard C. Rappleye .....630 West 168 Street
Joseph Tenenbaum .....2 East 77 Street
Gregory Zilboorg .....28 West 54 Street
Maurice J. Lewi .....45 West 81 Street
Smiley Blanton .....115 East 61 Street

CANDIDATES RECOMMENDED FOR ELECTION TO ASSOCIATE FELLOWSHIP ARE:

Lester R. Cahn, D.D.S. .....944 Park Avenue
Morton C. Kahn, Ph.D. .....Cornell Univ. Medical College
Abraham J. Goldforb, Ph.D. .....College of the City of N. Y.
Carney Landis, Ph.D. .....722 W. 168 Street



RUSSELL A. HIBBS
1869-1932

OBITUARY OF RUSSELL A. HIBBS

In the death of Dr. Russell A. Hibbs the art of surgery has lost a great leader, who in an especially difficult field opened pathways that have led to progress in directions hitherto held to be impassable.

Born in Birdsville, Kentucky, September 1, 1869, Dr. Hibbs attended Vanderbilt University and in 1890 was graduated from the medical school of the University of Louisville. After practising in Texas he came to this city in 1893 as an intern at Polyclinic Hospital. The next year he was appointed resident surgeon at the Orthopedic Dispensary and Hospital.

Coming to New York unknown and without influence, six years later, at the early age of 30, his ability had made him surgeon-in-chief of the New York Orthopaedic Hospital, a post he was to hold until his death. His inventive genius ranged the whole field of orthopedics, and his international reputation rests on many contributions covering a wide variety of subjects. Notable among these are his improvements in the treatment of tuberculosis of the joints, his method of treating diseases and injuries of the spine by the operation of spinal fusion, and his operations on the hip, knee, ankle and other joints.

He was deeply interested in the problems of medical education, and during his many years as professor of Orthopedic Surgery in the College of Physicians and Surgeons of Columbia University strove constantly to impress on his students his high conception of the medical calling. Through his instrumentality the Annie C. Kane Fund established fellowships enabling young doctors to continue their training during the first years after finishing internship at the New York Orthopaedic Hospital. Giving unstintingly of his time to the needy, he was especially concerned with the care of children, and as president of Hope Farm directed a community home for children at Millbrook. His major activities, however, centred about the New York Orthopaedic Dispensary and Hospital, the development and man-

agement of which formed the chief interest of his professional life. He was as great an administrator as he was a surgeon, and the magnificent new buildings of the Hospital, completed in 1916 and since enlarged, in planning and organization are largely his creation and form an enduring monument to his memory.

Dr. Hibbs died in New York, September 16, 1932. He was elected a Fellow of the Academy April 6, 1899. He was a member of the American Medical Association, American College of Surgeons, American Orthopedic Association and consulting orthopedic surgeon to a number of hospitals.

KARL VOGEL.

OBITUARY OF M. ALLEN STARR

Dr. M. Allen Starr, one of America's most distinguished neurologists and teachers, died in Marienbad, Germany, September 4, 1932. His family originally came from Middlebury, Vermont, but he was born in Brooklyn, May 16, 1854. Soon after his birth his family removed to Orange, N. J., where he had his early education in a private school. It is always interesting to know what determines an individual to follow the course which has led to eminence and distinction in his chosen calling and Dr. Starr has left some typewritten reminiscences of his early life which have a bearing on this. He felt as most people now do that certain personalities in youth have an immense influence on the future of their pupils, and he speaks feelingly of the stimulation he gained from the Rev. F. A. Adams who taught him Latin and Greek in the Orange School in an enlightened and creative way, and of his years at Princeton under the inspired teaching of Prof. Packard in Latin, Prof. Cyrus Brackett in Physics and the President of Princeton, James McCosh who made Philosophy and Psychology live in the minds of all so fortunate as to hear him.

Dr. Starr received the degree at Princeton of B. A. in 1876, M. A. in 1879, Ph.D. in 1884 and LL.D. in 1899.

It was in 1875 that the first investigations were being made showing the connection of mental processes with brain function. Fritsch and Hitzig in Berlin and Ferrier in London had just published the results of their physiological studies of the brain cortex, had established the relation of certain parts of the brain to movements of the body, had located the centres for motion of the head, arms and legs, and had demonstrated a relationship between certain parts of the brain and the faculty of speech. All this was presented to the students at that time by President McCosh in a most illuminating way. This new development in studies of the brain made a great impression on Dr. Starr, but when he went abroad after graduation from Princeton, he had a divided allegiance, for he had been promised a chair of history in which he also took great interest, if he would devote himself to that field. So in Europe he took courses in Berlin with Mommsen in Roman, and with Curtius in Greek history. But the lure of the other drive led him also to take lectures on physics by Helmholtz and to study the work of Wundt on mind and brain. These latter proved more attractive than dry history, so that on his return to New York after a year abroad he matriculated at the College of Physicians and Surgeons, taking the M.D. degree there in 1880. Here too he found the personality of certain professors arousing enthusiasm over and above all others, such as Alonzo Clark, Gaillard Thomas, Robert Sands and James McLean. Then came two years in Bellevue Hospital after which he again went abroad, this time with only one end in view, to Heidelberg with Erb and Schultze the foremost German neurologists of the day, and to Meynert and Nothnagel in Vienna. Nothnagel's lectures all that winter were on the subject of localization of function in the brain and spinal cord. After that he went to Paris for a course of study with Charcot.

On his return to New York in 1882 he found no labora-

tory where he could continue his microscopic work on the nervous system so established one in his own house to which students began to come for instruction. In 1884 he published an essay on the sensory tract in the nervous system and this was awarded the Alumni Association Prize of the College of Physicians and Surgeons, leading to his appointment as Professor of Anatomy and Physiology of the Nervous System at the New York Polyclinic and two years later as Professor of Nervous Diseases, until 1889 when he resigned to take the chair of Nervous Diseases in the College of Physicians and Surgeons, Columbia University, vacated by Dr. E. C. Seguin. He held this position until 1917 when he became emeritus. In 1905 Columbia University gave him the degree of Sc.D. During these fruitful years he was made consulting neurologist to the Presbyterian Hospital, St. Vincent's, St. Mary's, St. Johns at Yonkers, the Plainfield Hospital and the Westchester Hospital at Mt. Kisco.

He was President of the American Neurological Association in 1896, of the New York Neurological Society in 1894-97, and Vice-President of the Academy of Medicine 1903-6 and was foreign member of neurological societies in London, Paris, Berlin and Vienna.

Besides various papers printed in Brain, the New York Medical Record, Reference Handbook of the Medical Sciences, Lea and Co's System of Medicine, Princeton Review and Popular Science Monthly, Dr. Starr published a number of books as follows:

Familiar Forms of Nervous Disease by himself and assistants at the Vanderbilt Clinic 1890
Lectures on Nervous Diseases 1900
Lectures on Diseases of the Mind 1902
Brain Surgery 1893
Atlas of Nerve Cells 1896
Organic Nervous Diseases 1903
Organic and Functional Diseases of the Nervous System 1907 (4th edition 1913)

It is thus seen that he was one of the foremost American pioneers in neurology at almost the beginning of this specialty. There had been a few before him such as Weir Mitchell, W. A. Hammond, Beard and two or three others, most of whom were still living when he gave new impetus to the study of diseases of the nervous system. He contributed much to our knowledge of conditions novel then but familiar now, such as multiple neuritis, poliomyelitis, acromegaly, syringomyelia, multiple sclerosis, Grave's disease, myxœdema and cretinism, the aphasias, apraxia, and tumors of the brain and spinal cord.

The first operation for tumor of the brain in this country was in 1887 by Seguin and Weir. In 1893 only fifty cases in all literature of successful removal of tumor of the brain could be collected by Dr. Starr, while in 1930 Dr. Harvey Cushing was able to report two thousand of his own, and Dr. Starr stated shortly before he died that probably ten thousand cases had been operated to date, compared with the fifty cases in 1893.

Dr. Starr felt for his chosen department of medicine an intense interest, and his enthusiasm in his work communicated itself to his students and to all the associates with him in his clinical and professional work. His lectures were always thronged not only by the college students but by practitioners who came to learn of the new advance in neurology. He had a great gift in the matter of orderly, masterly and inspiring presentation of any subject that came up for discussion or lectures. His ambidexterity in drawing sections of brain or cord or patterns of cerebral lesions on the blackboard as he talked elicited often especial applause. He was one of the most kindly of men, generous and helpful to all of his assistants, students and friends, and everyone gave him an unusual meed of admiration and loyalty.

FREDERICK PETERSON.

DEATHS OF FELLOWS OF THE ACADEMY

EMANUEL DAVID NEWMAN, M.D., 81 New Street, Newark, N. J.; graduated in medicine from the College of Physicians and Surgeons, New York City in 1884; elected a Fellow of the Academy February 6, 1908; died, November 4, 1932. Dr. Newman was Secretary of the Academy of Medicine of Northern New Jersey for sixteen years, a Fellow of the American Medical Association, a member of the New Jersey State Medical Society and the Essex County Medical Society, and was connected with a number of hospitals in New Jersey and New York.

RICHARD JOHN ERNST SCOTT, M.D., 494 Fourth Street, Brooklyn, N. Y., graduated in medicine from Cornell University Medical College, in 1899; elected a Fellow of the Academy October 7, 1915; died, October 24, 1932.

HERBERT GATZ WERTHEIMER, M.D., 200 Ninth Street, Pittsburgh, Pa.; graduated in medicine from the University of Pennsylvania, Philadelphia, in 1901; elected a Fellow of the Academy November 3, 1921; died October 25, 1932. Dr. Wertheimer was a Fellow of the American Medical Association, and a member of the Allegheny County Medical Society.

GROUP PURCHASE OF HOSPITAL CARE

E. H. L. Corwin

The British experience with the so-called "contributory schemes" is extremely interesting and enlightening. For those of us who are not quite familiar with the provisions of the British Health Insurance Act, it would seem strange that in a country where compulsory insurance against the contingency of illness exists, there be a need for further arrangements to provide for hospitalization. In some countries the hospital is a part of the general play for the care of the insured sick, whether it be provided by law or by administrative procedure, but in Great Britain the treatment provided in case of illness is of a kind which can be properly undertaken by a general practitioner "of ordinary professional competence and skill." It does not provide for treatment requiring the facilities of a hospital.

The contributory hospital schemes of Great Britain provide a method of raising revenue for the voluntary hospitals through group purchase of hospital service. They owe their inception and development to the postwar economic conditions. The burdens of taxation, the disorganized trade of Great Britain following the War, and the growing difficulties of providing employment, have impoverished the British population, and the maintenance of social insurance has placed enormous responsibilities on the Government exchequer. The wealthy families became less able to meet the growing demands on the part of various charitable endeavors and the situation of the voluntary hospitals in the beginning of the last decade in Great Britain became so desperate that a special Committee was appointed by the Government early in 1921 to inquire into the situation. This Special Committee was presided over by the Viscount Cave and it was requested "to consider the present financial condition of voluntary hospitals and to make recommendations as to any action which should be taken to assist them." The Committee reported under date of May 21,

1921. To the fundamental question as to whether or not the voluntary hospitals should be encouraged to continue, or whether it would not be more desirable that they should be turned over to the State and be henceforth maintained by taxation, the unanimous answer of the Committee, expressed in no uncertain terms, was to the effect that "the money loss to the State would be a small matter compared with the injury which would be done to the welfare of the sick for whom the hospitals are provided, the training of the medical profession and the progress of medical research," if the voluntary hospital should be allowed to pass. "The voluntary hospital system, which is peculiar to the English-speaking peoples, is part of the heritage of our generation; and it would be lamentable if by our apathy or folly it were suffered to fall into ruin."

There are at present at least 270 hospital contributory schemes in Great Britain of varying size, and differing from each other in details of practice and privileges accorded to their contributors. They have an enrolled membership of over six million people, not including dependents of contributors. They contribute annually into the treasury of the voluntary hospitals two and a half million pounds, or from 60% to 70% of the entire income of the hospitals. A description of the principal features of any one of the successful plans will implement the purpose.

The essentials of the Merseyside Plan which is one of the most successful ones, are as follows:

1. All of the 22 voluntary hospitals of the four boroughs (Liverpool, Birkenhead, Bootle and Wallasey) have agreed to the plan, i.e., to pool their resources as a unit and to abstain from making individual appeals to the community for support;

2. The city authorities, the public assistance officers, organized labor, the medical profession, the churches, and the University, have all allied themselves with the hospitals in conducting a financial campaign for the maintenance of hospitals;

3. The industrial workers have consented to make weekly contributions toward the support of hospitals and toward their own protection in case of illness requiring hospitalization;

4. The employers of labor have agreed to deduct the voluntary contributions of their workmen and to turn them over to the Council plus their own contributions, the size of which varies;

5. The employees, as well as workmen, are represented on the Central Council as on its various committees; and

6. The Merseyside Council serves both as a community chest for the hospitals and as a quasi hospital insurance fund for the small contributors.

The Plan, as it has been worked out there, is only a few years old and is admittedly an experiment. The penny in the pound contribution was initiated simply because of its slogan value and the ease with which contributions could be calculated. It does not take into consideration the size of the family of the contributor. It bases the contribution in proportion to earnings of the individual rather than in proportion to the risk involved. There was not enough of a body of information in existence at the time it was started, to organize it on a strictly actuarial basis, and it might not have succeeded if it were organized in that way at first.

In return for his weekly contribution, the Fund guarantees to the contributor and his dependents the payment of hospital treatment, if and when needed, as well as auxiliary services, such as ambulance service, surgical appliances, extra nourishment, convalescent care, spa treatment and so on. Although the Council has practically succeeded in balancing the hospital budgets, it recognizes that the penny in a pound contribution is inadequate to meet the cost of hospitalization.

Under the Contributory Schemes there is no contract for

free medical service except that free medical service is provided up to the limit of existing hospital accomodation. In other words, the contributors realize that they cannot receive service if the hospitals are overcrowded at the time of their need, or if they should suffer from conditions unsuitable for hospitalization. In that event however, the Fund provides payment for treatment in a municipal hospital. These hospitals include the former Poor Law Hospitals, which, under an Act of Parliament of 1929, have been taken over by the municipalities, and are providing care for certain types of infectious and chronic maladies and for acutely ill patients who are destitute. A contributor to the Merseyside Fund, sent by a physician to a municipal hospital, is, by virtue of the arrangement made, free from financial investigation. Under the Merseyside Plan, and in some other communities, the wife of the contributor and his bona fide dependents, that is, those who are resident with him and wholly dependent upon his earnings, are entitled to full hospital benefits.

The point may be raised whether the pattern of organization and function of the British Contributory Schemes is applicable in this country. In view of the existing financial conditions in which many of our private hospitals find themselves, and in view of the growing conviction among the well-informed people in this country that some play of constructive provision for the care of the sick is needed, the progress made in Great Britain with the contributory schemes deserves thoughtful attention.

The three outstanding differences concerning hospitalization between the two countries should, however, be borne in mind:

1. In England the general city or county hospital is a matter of recent development. Hitherto, aside from the fever hospitals, the tuberculosis and mental disease hospitals, the care of the indigent sick was provided in Poor Law hospitals, which were not very desirable institutions. Hence the avidity of the working class for insurance which would safeguard against the Poor Law hospital.

2. The British National Health Insurance Act provides for medical care of the workman by physicians of ordinary or average professional capacity. It does not provide for the services of specialists or of hospitals. The insured person cannot resort to the hospital unless there is a definite occasion for hospitalization certified to by the panel physician. The voluntary hospital reserves its right of admission. Hence the insured person cannot very well abuse the privilege of hospital care under the contributory scheme.

3. In but a few of the voluntary British hospitals are there facilities for private or semi-private patients. Practically all patients in these hospitals are under the free care of the visiting and resident staff of the hospital.

In order to appraise properly the problem involved in group purchase of hospital insurance in a city like New York, it is important to bear in mind very clearly the following three questions:

I. For what groups in the population is hospital insurance to be provided?

II. How can the difficulties inherent in the situation be obviated or minimized, and

III. What should the machinery through which this insurance should be set in motion, granting that it be feasible and practical?

1932

STANDING COMMITTEES OF THE ACADEMY

COMMITTEE ON ADMISSION

ALFRED T. OSGOOD, *Chairman*

HARRY M. IMBODEN
GEORGE M. MACKEE
EMANUEL D. FRIEDMAN
WARD J. MACNEAL
HOWARD H. MASON
MERVIN C. MYERSON
EDGAR STILLMAN
CONSTANTINE J. MACGUIRE, JR.
ARTHUR H. TERRY, JR.
WILLIAM E. STUDDIFORD, JR.
HAROLD T. HYMAN

COMMITTEE ON LIBRARY

ALFRED F. HESS, *Chairman*

ALFRED E. COHN
J. RAMSAY HUNT
WILLIAM S. THOMAS
SAMUEL W. LAMBERT

COMMITTEE ON PUBLIC HEALTH RELATIONS

JAMES ALEX. MILLER, *Chairman*
Executive Committee

HARRY ARANOW
GEORGE BAEHR
CHARLES L. DANA
LEWIS F. FRISSELL
MALCOLM GOODRIDGE
ADRIAN V. S. LAMBERT
SAMUEL W. LAMBERT
BERNARD SACHS
FREDERIC E. SONDERN
HOWARD C. TAYLOR
PHILIP VAN INGEN
HERBERT B. WILCOX
E. H. L. CORWIN,
Executive Secretary

COMMITTEE ON MEDICAL EDUCATION

HARLOW BROOKS, *Chairman*
Executive Committee

ARTHUR F. CHACE
EDWARD CUSSLER
CARL EGGERS
NELLIS B. FOSTER
EDWARD H. HUME
SAMUEL J. KOPETZKY
EMANUEL LIBMAN
JOSEPH F. MCCARTHY
JOHN J. MOORHEAD
BERNARD S. OPPENHEIMER
HOWARD F. SHATTUCK
GEORGE GRAY WARD
FREDERICK P. REYNOLDS,
Medical Secretary

COMMITTEE ON SECTIONS

FREDERICK TILNEY, *Chairman*
and
The Chairman of each Section

COMMITTEES OF THE COUNCIL AND TRUSTEES

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SETH M. MILLIKEN
WALTER L. NILES
GEORGE DAVID STEWART

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FORDYCE B. ST. JOHN

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EUGENE H. POOL

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ALEXANDER T. MARTIN
FRED P. SOLLEY
WILLIAM C. WHITE
ORRIN SAGE WIGHTMAN
IAGO GALDSTON,
Executive Secretary

THOMAS W. SALMON MEMORIAL COMMITTEE

C. C. BURLINGAME, *Chairman*

HAVEN EMERSON
ADOLF MEYER
WILLIAM L. RUSSELL
FRANKWOOD E. WILLIAMS

OFFICERS OF SECTIONS AND AFFILIATED SOCIETIES, 1932-33

Dermatology and Syphilology, 1st Tuesday

Chairman	*Secretary*
A. Benson Cannon	Louis Chargin
371 Park Avenue	1 West 85 Street

Surgery, 1st Friday

William Barclay Parsons, Jr.	Ralph Colp
180 Ft. Washington Avenue	111 East 88 Street
	(appointed pro tem)

Neurology and Psychiatry, 2nd Tuesday

Byron Stookey	Clarence P. Oberndorf
151 East 83 Street	112 West 59 Street

Historical and Cultural Medicine

2nd Wednesday of November, January, March and May

C. N. B. Camac	Howard Reid Craig
76 East 56 Street	175 East 79 Street

Pediatrics, 2nd Thursday

John Caffey	Harry Bakwin
Bard Hall, Haven Avenue	132 East 71 Street

Ophthalmology, 3rd Monday

Mark J. Schoenberg	Algernon B. Reese
1160 Park Avenue	73 East 71 Street

Medicine, 3rd Tuesday

Robert F. Loeb	Henry J. Spencer
Presbyterian Hospital	24 West 10 Street

Genito-Urinary Surgery, 3rd Wednesday

George F. Hoch	C. Travers Stepita
115 East 61 Street	2 East 54 Street

Otolaryngology, 3rd Wednesday

Charles J. Imperatori	David H. Jones
108 East 38 Street	140 East 54 Street

Orthopedic Surgery, 3rd Friday

Mather Cleveland	Paul C. Colonna
115 East 61 Street	59 East 54 Street

Obstetrics and Gynecology, 4th Tuesday

Francis W. Sovak	Frederick C. Freed
117 East 72 Street	59 East 54 Street

The New York Roentgen Society, 3rd Monday

President	*Secretary*
J. Bennett Edwards	C. Wadsworth Schwartz
144 Woodridge Pl., Leonia, N. J.	33 East 68 Street

Society for Experimental Biology and Medicine, 3rd Wednesday

Dayton J. Edwards	A. J. Goldforb
First Avenue and 28 Street	Convent Avenue and 139 Street

Harvey Society, 3rd Thursday

Alfred F. Hess	Edgar Stillman
16 West 86 Street	22 East 69 Street

New York Pathological Society, 4th Thursday

Paul Klemperer	Maurice N. Richter
378 Central Park West	630 West 168 Street